Maritime mobile operations on low power

Tony Halter VK3TLA

As a teenager growing up in Queensland, I remember becoming very interested in communications and reading *CB Action* and *Amateur Radio Action* on the various exploits of operators all around the globe. In many ways I was envious because I did not have the equipment or ability to even remotely emulate their DX success or otherwise.

Some years later I joined the RAN as an RO (Radio Operator) and was exposed to the interesting and different world of military communications. Singularly, I learnt at the junior levels there wasn't too much playing with radios - mostly shuffling paper and typing signals. However, much was learnt in the early days of my Navy career.

After some time I gained my Commission and completed my various training regimes and completed different sea deployments. I was then posted to RAN Recruit School as a Lieutenant in charge of a division of Recruits. In this position I would have to frequently go to sea on the *Seahorse Spirit* in a supervisory role.

Being an active ham, I immediately discussed the idea of taking 2 m and 70

The Deal Island Group, a stony outcrop in the middle of Bass Strait, viewed from the west. I worked 160 metres to the US on the same day this photograph was taken. The RF noise on Deal Island is very low on the lower bands.

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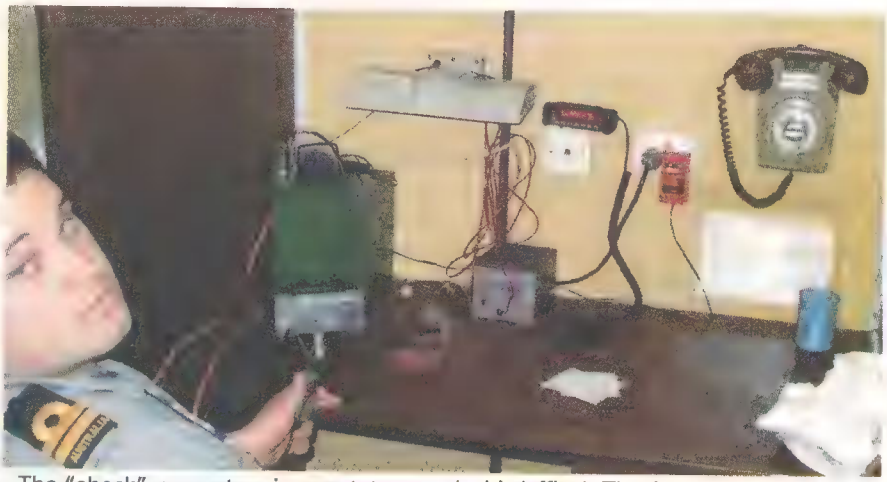
cm to sea with the Master of the vessel. Unlike a commissioned RAN vessel, there are no restrictions of emissions. *Seahorse Spirit* (VKNG) is a merchant vessel operated by Defence Maritime Services. The master indicated that, provided I operated on a strict non-interference basis, there would be no problem. So, it began the very next week.

I initially operated my FT-7800 portable with a GelCell battery in a green metal box with the antenna mounted on the box. This, however, meant that I had to be on the bridge wings or out in the weather to operate the radio. Winter time in Bass Strait is not at all pleasant. So, there had to be a better way. I decided to take a ground independent mobile 2 m and 70 cm antenna to sea. Dave Wilson of TTS Systems at Tyabb kindly provided me with an antenna until the arrival of the Diamond SG7500 Dual Band antenna.

This proved to be very successful; however, I had often, on air and otherwise, discussed how well HF would work at sea. My earlier communications training and experience gave me the impression that I would do very well from sea. But, I did not have a suitable rig to take to sea. And there was a significant issue with what antenna to use. Again, Dave from TTS came to the rescue. He offered me the use of the SGC 2020 20 Watt HF rig and the SG-237 Smartuner.

I initially baulked. However, on further consideration I jumped at the opportunity. I already had the means to power the radio – the Gel Cell and a small power supply for the tuner. We decided that I would take the aluminium tubing from a Station Master Mk II. Initial testing revealed that the Smartuner easily handled the length of tubing on 80 metres. However, when I returned to the ship I quickly discovered that there was very little mounting space for another HF vertical antenna. I decided to go with plan B, a wire antenna. As it turned out this was a very good decision, albeit forced by circumstance.

So, after the installation I could hardly wait to try out the radio. It was at about 1000 hrs local when I fired it up. I called VK3MED, who was situated about 20 km to the south, and we conducted a test. The Smartuner and SG2020 were a formidable team. I selected CW on the radio and, with two short bursts on the key, the antenna was tuned and I was on 80 metres. Dave and I continued to test all of the bands, some of which Dave could only listen on and report back to me on 2 metres. Signals



The "shack" was set up in my stateroom (cabin/office). The SG2020 is just above my left hand, with the metal box housing the 18 Ah GelCell and the body of the FT-7800 behind it. The remote head of the FT-7800 can be seen between the desk lamp and the phone. The GelCell battery is charged by a 1 amp Arlec charger. The efficiency of this charge seemed to be affected by the ship's 60 Hz supply.

The *Seahorse Spirit*.

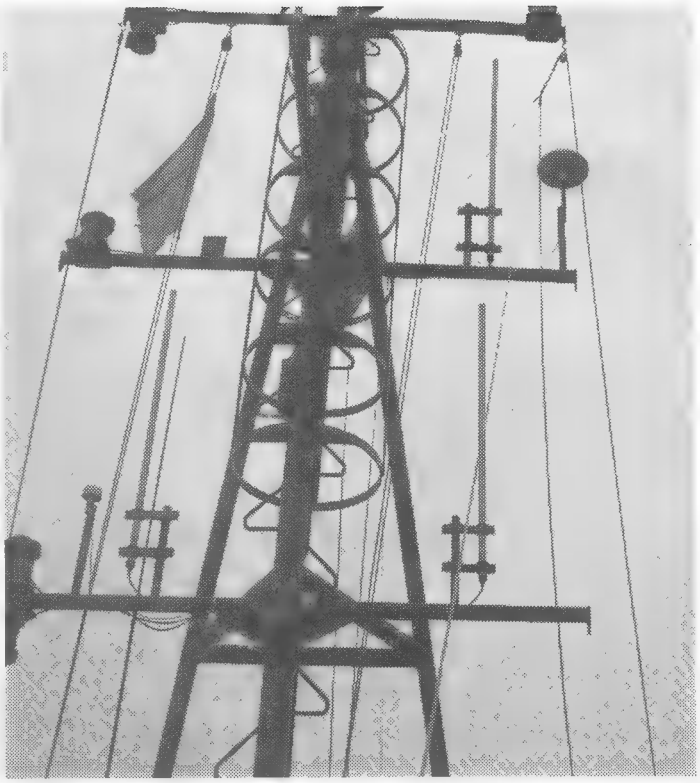
The SG-237 Smartuner on deck.

were S9 or greater on the bands tested. Finally, I had HF at sea.

Throughout the afternoon I managed some contacts on 40 and 20 metres. I noticed on the lower bands that the radio was not performing as well as I had expected. Originally, I had only 14 metres of wire aloft. On Tuesday morning, when the ship went to anchor at Deal Island, I proceeded aloft and altered the length of the antenna, bringing it to about 29 metres. This functioned far better.

At this point I will briefly talk about the safety issues on board ship. When a ship is under way often the RADAR is radiating and rotating. The slotted wave guide antenna visible in the photos can radiate large amount of RF. This is very hazardous, particularly when possibly grounding out antennas, etc when in close proximity to the rotating antennas. For safety reasons I did not access the antenna areas until the RADAR was switched to stand by and not rotating or radiating. This is a very important safety issue, as Masters are often reluctant to isolate RADAR equipment whilst under way. Therefore it is better to wait until the ship is at anchor.

With the extension on to the antenna I noticed a real difference. I was attempting to operate on the VK7 afternoon 80 metre net. On Monday afternoon I could barely make contact. On Tuesday afternoon with the longer antenna I was receiving S9 from most in the net. Also, working back to Melbourne I was having no difficulty. All of this on low power. I decided to try my hand at DXing next and I was pleasantly surprised.



The HF wire antenna passes over the OMNI TV antenna (top right of photo) and back down the other side providing a length of 29 metres.

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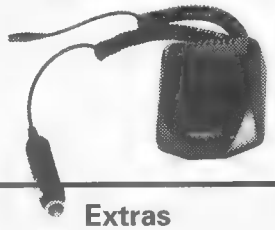

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I felt that, with low power (less than 20 watts ERP), grey line propagation would be my best hope, and this proved to be the case on Tuesday, Wednesday and Thursday nights. I managed to work European stations in Slovenia, Ukraine, Norway and Spain most nights on 20 metres. 40 metres would get me through to the US in the evenings as well as the 80 metre DX window.

Dave from TTS was quite impressed with the sound of the rig when I conversed with him as well. One feature of the rig which can not be understated was the DSP2 software of the SG2020. This feature alone makes it a worthwhile purchase. It turned very ordinary bands with high QRM/QRN in to VHF quality audio. I did notice that this was when the signal strength of the contact was about 3 or 4. It was really good for separating the 'wheat from the chaff' so to speak.

Dual band antenna inserted in to PVC pipe fastened to the guard rail 15 m above the sea. The antenna was fed with RG-214 double shielded cable.

On VHF/UHF I had a high degree of success. On Tuesday morning, approximately 30 miles to the east of Deal Island, I managed to work in to north-west Tasmania on the Mount Read repeater VK7RWC. I estimated the distance somewhere about 320 km. Later the same day, I worked in to VK7RAA. During this contact a number of stations reported that I could be heard on simplex and a simplex contact was briefly established. As was a 70 cm contact on VK7RBH. All of these contacts were on about 20 watts.

The experience reminded me of some valuable lessons. Firstly, on low power you can get through. if you persist. New Foundation licence holders please note: You have access to the bands that WILL give you DX contacts. It is simply a matter of persistence. Operating at sea is very advantageous. The 'maritime mobile' at the end of the call sign does attract interest from DX stations, particularly in a pile up, and the level of ambient RF noise is much lower away from the coast. That is a distinct advantage. The other thing I relearned is that automatic tuners are great. Sure, they are expensive, but a rig with all of the 'wiz bang' gear is nothing without a good antenna. An automatic tuner makes that piece of random wire into a really good antenna.

I had a fun week at sea, and I would like to thank Dave from TTS for providing all the great gear to take, and the assistance to get it on air. Also, thanks to the Master of *Seahorse Spirit* for allowing me to put some antennas temporarily on the ship.

A visit to Deal Island it is well worth the trip. It is very picturesque and would prove an excellent temporary QTH for a DXpedition or light house weekend. There is plenty of room to erect that 160 meter dipole or that tri-band beam. The caretakers are on a three months voluntary basis, accommodation provided, with Tasmania Parks and Wildlife Service.

If you were looking for three months break from society and a serious DX QTH, Deal Island may be of interest to you. There is also extra accommodation which may suit a light house weekend or DXpedition .

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